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| <b>Notice of Allowability</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                               | 10/771,073             | SENKO, MICHAEL W.   |  |
|                               | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                               | James J. Leybourne     | 2881                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_\_.
2. ☒ The allowed claim(s) is/are 1-30.
3. ☒ The drawings filed on 02 February 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br/>Paper No./Mail Date <u>8/16/04</u></li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____.</li> <li>7. <input type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
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**DETAILED ACTION**

***Allowable Subject Matter***

1. Claims 1-30 are allowed.
2. The following is an examiner's statement of reasons for allowance:
3. Regarding independent claims 1, the prior art fails to disclose or make obvious a method for operating a quadrupole ion trap in mass spectrometry, the method comprising:  
  
determining a calibrated resonant frequency for precursor ions in a first ion population in an ion trap; determining a frequency adjustment for the precursor ions in a second ion population based on the number of ions in the second ion population; and operating the ion trap using an adjusted resonant frequency that is based on the calibrated resonant frequency and the determined frequency adjustment.

Claims 2-12 are allowed by virtue of their dependency on claim 1.

With respect to the independent claim 13, the prior art fails to disclose or make obvious a method for determining a resonant frequency for a population of ions in an ion trap based on a calibrated resonant frequency for a first ion population and an estimated number of the ions in a second ion population in the ion trap; and using the estimated number of the ions and the calibrated resonant frequency to determine an adjusted resonant frequency for the ions in the second ion population.

Claims 14 and 15 are allowed by virtue of their dependency on claim 13.

With respect to independent claim 16, the prior art fails to teach or fairly suggest a software product, comprising instructions operable to implement the method of claim 13.

Claims 17-18 are allowed by virtue of their dependency on claim 16.

With respect to independent claims 19 and 26, the prior art fails to teach or fairly suggest a mass spectrometry system, comprising means for implementing the method of claim 13.

Claims 20-25 are allowed by virtue of their dependency on claim 19.

Claims 27-30 are allowed by virtue of their dependency on claim 26.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance"

5. The main feature that separates the methods and apparatus apart from prior art is measuring the resonance frequency of ions in an ion trap at two populations (ion densities) and determining an adjusted resonance frequency correction based on the ion density and the shift in resonance frequency.

***Relevant Prior Art***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to show the state of the art with respect to fluid treatment with irradiation

USPN 6787760 to Belov et al.,USPN 5128542 to Yates et al. and USPN 5448061 to Wells discuss space charge effects in ion traps for mass spectrometers.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James J. Leybourne whose telephone number is (571) 272-2478. The examiner can normally be reached on M-F 9:00- 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



NIKITA WELLS  
PRIMARY EXAMINER

10/15/04

October 14, 2004

JJL